Phonological phrase boundaries can help French and American infants to extract words from fluent speech.

Séverine Millotte
Laboratoire de Sciences Cognitives et Psycholinguistique, EHESS-CNRS-ENS, Paris, France.
severine.millotte@ens.fr

Anne Christophe
Laboratoire de Sciences Cognitives et Psycholinguistique, EHESS-CNRS-ENS, Paris, France.

Sylvie Margules
Laboratoire de Sciences Cognitives et Psycholinguistique, EHESS-CNRS-ENS, Paris, France.

Jim Morgan
Cognitive and Linguistic Sciences, Brown University, USA.

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Abstract

How do infants quickly become fluent speakers of their native language ? One of their first tasks is to extract words from fluent speech. Indeed, speech is continuous : spoken words are not delimited by salient pauses that would play a role similar to spaces in written text. One way to resolve this problem is to rely on information that can be readily found in the speech signal itself. Many studies demonstrated that infants segment the speech stream into words using rythmic cues (Jusczyk et al., 1999b), statistical cues (Saffran et al., 1996), phonotactic cues (Mattys & Jusczyk, 2001) and allophonic cues (Jusczyk et al. 1999a). We investigated another source of information : phrasal prosody. Spoken words are not delimited by pauses, but on the other hand words and syllables are not pronounced in a monotonous way (such speech would sound robot-like). Instead speech has intonation and rhythm. Phrasal prosody groups words together into different constituents such as intonational phrases and phonological phrases (see Shattuck-Hufnagel & Turk, 1996, for a review).

We evaluated the use of phonological phrase boundary cues by 16-month-old French-learning infants. In a first session of a Conditioned Headturn experiment, infants were trained to turn their head for a bisyllabic word (e.g. " **balcon** "). In a second session, infants listened to sentences that contained either the familiar word (e.g. " [Le vieux **balcon**] [s'appuyait sur le chêne] "), or its two syllables separated by a phonological phrase boundary (e.g. " [Ce grand **bal**] [**con**sacrera leur union] "). We found that 16-month-olds turned their head significantly more often when they heard the target word itself than when they heard its constituent syllables separated by a phonological phrase boundary (respectively 50% versus 27%). Infants of a monosyllabic group, trained to respond to the monosyllabic word (e.g. " bal), showed the reverse pattern : they turned significantly more often for sentences that contained the monosyllabic target word itself than when it was a part of a bisyllabic word (46% versus 28%).

French infants of 16 months of age are thus able to exploit phonological phrase boundaries to find words in fluent speech. We will discuss this result in comparison with a pilot experiment with 13-month-old French infants as well as previous results obtained by Gout et al. (2004) with 10- and 12.5-month-old American infants, that seem to indicate a possible delay in word segmentation ability for French-learning infants.

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